

CLAIMS

What is claimed is:

5 1. A method for programming a plurality of magnetic memory cells, the plurality of magnetic memory cells being coupled to a bit line, the plurality of magnetic memory cells being associated with a plurality of digit lines, the method comprising the steps of:

 (a) providing a bit line current in the bit line; and

10 (b) providing a plurality of digit currents in parallel in the plurality of digit lines for the plurality of magnetic memory cells at substantially the same time as the bit line current, the plurality of digit currents and the bit line current allowing the plurality of magnetic memory cells to be written to a plurality of states in parallel.

15 2. The method of claim 1 wherein the bit line current is applied for a first predetermined time and the plurality of digit currents is provided for a second predetermined time.

20 3. The method of claim 2 wherein the first predetermined time is two nanoseconds.

 4. The method of claim 3 wherein the second predetermined time is 1.6 nanoseconds.

5. A magnetic memory comprising:

a plurality of magnetic memory cells

a bit line, the plurality of magnetic memory cells being coupled to the bit line;

5 a plurality of digit lines, the plurality of magnetic memory cells being associated with
the plurality of digit lines;

at least one write circuit configured to provide a bit line current in the bit line and to
provide a plurality of digit currents in the plurality of digit lines in parallel at substantially
the same time as the bit line current, the plurality of digit currents and the bit line current
10 allowing the plurality of magnetic memory cells to be written to a plurality of states in
parallel.

6. The magnetic memory of claim 5 wherein the bit line current is applied for a
first predetermined time and the plurality of digit currents is provided for a second
15 predetermined time.

7. The magnetic memory of claim 6 wherein the first predetermined time is two
nanoseconds.

20 8. The magnetic memory of claim 7 wherein the second predetermined time is
1.6 nanoseconds.